The Development of the Equipment Reservation System for Computer and Information Technology Department

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Abstract: - The project’s purposes were to develop Storage Information Management System for Computer and Information Technology Department. This system is to aggregate group of work which is about all Storage system to single system. The advantages are reduced method and increase more effectiveness for system. The development process began with investigation, collected information and data to consider for limitation of development and developed working process. After completed, the Equipment Reservation System had been inspected by experts to identify the problems that need to modify. The quality of the Equipment Reservation System was evaluated by expert and received a very high quality which scored 4.53. In addition, users are very satisfied with the system which scored 4.37.

Key-Words: - Equipment Reservation System, Storage Information System Management, Database, System Analysis, System Design

1 Introduction

Supplies management service is involved with the supplies system which divided into two kinds: materials and durable articles. The material service is including issue of check out and return the materials, providing the material and statistic report. The durable articles service is about tracking the durable articles, maintenances and available trading statistics reported. These are the main works for supplies management service department [Regarding Thai Prime Minister on Procurement Policy about supplies, 2000]. Computers use can to reduce the delays caused by the searching process. However, the materials and programs that support on reservation, monitoring, tracking and forecasting of durable article use are especially rare and do not meet the department needs. Computer and Information Technology department, faculty of Industrial Education and Technology at King Mongkut's University of Technology Thonburi is experiencing this problem as well.

Computer and Information Technology department collected and organized the information about material and durable article in form of documents and have been modified frequently. The lack of a computers system to manage and manipulate cause overlap work such as stored many duplicated information and also wasting on budget to store information. Officers who in charge need to spend a lot more attention for recording, or change information at the same time causing the slow operation. The information is also not up to date and the amount of document works increase more everyday. Therefore, difficulty to store and destroy document occur all the time which waste a large budget to solve this problem.

From these reasons, the researchers bring up the concept to develop the Equipments Reservation System for Computer and Information Technology department, faculty of Industrial Education and Technology at King Mongkut’s University of Technology Thonburi to support the supplies management service in accordance with Procurement Policy and can be verified.

2 Research Approach

1. The developed system displays the status of equipments in Computer and Information Technology department correctly.
2. The developed system has systematically reports management.
3. The developed system reduces working process and operation time for making a reservation.

3 Research Objectives

1. Develop Equipment Reservation System for Computer and Information Technology department.
2. Evaluate the quality of systems by experts.
3. Evaluate the satisfaction of system by users.
4 Research Methodology

Research and developing the information systems followed the process of System Development Life Cycle theory; SDLC as follows.

4.1 Identifying Problems Opportunities and Objectives

In this process, the researchers studied and identified the problems that occur in the reservation operation and then determine the opportunities and possibilities of developing the system. The problems can be summarized as follows.

1) Delayed in reservation, returning and checking out the equipments.
2) Equipments were not store correctly according to the types.
3) Incorrectly identify the users’ authority to check out the equipments.
4) Mistaken in the returning date and the late-returning equipments.
5) No equipments usage statistics report.

4.2 Determining Information Requirement

The researchers approach to the suggestions from users who are officers about the improvement to meet their needs. The suggestions can be summarized as follows.

1) The system can be managed by computers.
2) The system has an uncomplicated process with user-friendly interface.
3) Record the equipments data correctly and be able to use this information for further development.
4) The system is able to identify different level of users and members’ authority, and calculate for the late-return equipments fees properly.
5) The system can display various statistic reports such as number of equipment, fees summary and members data correctly.

4.3 Analyzing System Needs

In this process, the researchers have analyzed the needs of users who are members and consider the possibility of development of the new system that required sub-system to complete the system. Moreover, the information about processing of the system and computer features for this system is required for developing the system.

4.4 Designing the Recommended System

After examine with the processing of the system, the researchers designed the Reservation System by writing the following diagram.

1) Context Diagram
2) Data Flow Diagram
3) Logical Diagram
4) ER-Diagram

4.5 Developing and Documenting Software

The system developed by the PHP language used in software and MySQL Database which has been developed following the diagram in the design process.

4.6 Testing and Maintaining the System

After the system has been completed, it requires an inspection for improving the system by experts and sample group for testing system. The experts and sample group has encountered errors to make the system working correctly and efficiently.

4.7 Implementing and Evaluating the System

When completed, The Reservation System brought up to use at Computer and Information Technology department, faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi. The researchers prepared manual and training course for staffs and officers. Monitor the Reservation System to evaluate the efficiency and performance that it can be valid use.

5 Data Collecting

Data are collected into two aspects; system quality, user’s satisfaction of the Reservation System by the following methods.

5.1 Evaluate the quality of the system by three experts by questionnaires within four aspects:

5.1.1 Data Input

1) Convenient for new data entry.
2) The words are understandable to access the system correctly.
3) Real time data displaying even the new information has just entered.
4) Preventing a duplicate data entry.
5) Be able to the data as needed.
6) The system can reduce errors in data entry.
7) Facilitate the recording information.

5.1.2 The Reservation System process

1) Facilitate the searching access.
2) The system can reduce the searching processes.
3) The speed of data processing.
4) Flexibility in operation.
5) The ability to reduce the process of work

5.1.3 Display Unit (Output)
1) The result is completed with corrected data.
2) The results are accurate and clear.
3) The results meet the demands.
4) The results can be used in other systems.
5) The system reduce reporting time.
6) The report screen display to verify accuracy before printing.

5.1.4 Storage
1) Save space in storage.
2) Storage security.
3) Data backup and can be use again incase of emergency.
4) Only authorized users can access to specific information.

5.2 Evaluation of users’ satisfaction with the Reservation System for staffs, officers and members at Information Technology department assess the system for four aspects as followed:

5.2.1 Satisfaction of data input
1) Reliable System which can reduce errors and complexity of importing data.
2) Easy to use under the same standard.
3) The System enables higher quality work.
4) The System is easy for working operation.

5.2.2 Satisfaction of system process.
1) Easy to search for information.
2) The speed of data processing.
3) The ability to reduce the working process.

5.2.3 Satisfaction of data display.
1) The result is a complete and clear.
2) The results meet the demand.
3) The System saves time for checking equipments status.

5.2.4 Satisfaction of storage.
1) Monitoring the accuracy of data storage.
2) Require users’ authority for accessing stored data.
3) Storage security.

6 Data Analysis
After collecting the data, the Equipment Reservation System at Computers and Information Technology department analyzed using the Likert’s scale criteria. The results are as followed.

1. The over all quality of the Equipments Reservation System evaluated by experts, the score remained 4.53 which ranked as a very high level. For considering each part, the sections that ranked as a very high quality are the Input section, the output section. For the system process and the storage section received a high quality level. The experts agree that the system is valid working and effective use.

2. The satisfaction about The Equipment Reservation System was evaluated by users who are staff, officers and members. They were very satisfied with the over all system given 4.37 average score. For section considered, the Input section, the Output section, the system Process section and the storage section ranked as a satisfied with the system. It shows that the sample group agree that the Equipment Reservation system worked well and meet their needs.

7 Discussion
The development of the Equipment Reservation System for Computer and Information Technology Department received the high quality level as well as very satisfied level from the sample group in high level by the following reasons.

7.1 The Input and the Output sections:
For these sections, the researchers mainly considered the usage of the system by observing the flow of information and documents in the existing system. The information from observation applied to developed system. Consequently, the input section became familiar with the existing system so there was no wasting time to adapt to the new system. It also facilitates and provides flexibility working process to the users. The interface design implied from the theory of graphic user interface design and theories of management information. Therefore, the icons, pictures, layouts and a description on the screen were appropriately design. This is consistent with the results from evaluation by experts given very high quality. The evaluation from users ranked as very satisfied.

7.2 The System Process and the Storage sections:
The researchers designed the system process followed developing information systems theory and database management systems theory. The system worked effectively and reduced duplication of processes. It also reduced the working operation time. This is consistent with the results of evaluation by experts given the high quality on the system process section and very high quality on the storage section. The satisfaction evaluation from the sample group considers the processing system and the storage as a very satisfied.
References:


